FURTHER DISCUSSION OF FREQUENCY DISTRIBUTIONS

Class Intervals

In Lesson 2 you were introduced to frequency distributions, tables which list the values a variable can take and the number of observations with each value. When the variable takes on a limited number of values (say, less than 8 or 10), we usually list the individual values. When the variable takes on more than 10 values, we usually group the values. These groups of values are called **class intervals**. (We discuss how you decide what class intervals to use in Lesson 4.) A frequency distribution with class intervals usually has from 4 to 8 such intervals. Table 3.1a shows a frequency distribution of a variable, glass of water consumed in an average week, with 8 class intervals.

Notice in Table 3.1a that the categories of water consumption do not overlap, that is, the first class interval includes 0 and 1 glasses of water, the second interval includes 2 and 3 glasses, and so on. When we enter data in a frequency distribution, we must always decide how to treat fractional data. For example, where would you put someone who reported drinking 1.8 glasses of water?

Generally, when we record fractional data in a frequency distribution we follow conventional rounding rules:

- If a fraction is greater than .5, round it up (e.g., round 6.6 to 7)
- If a fraction is less than .5, round it down (e.g., round 6.4 to 6)
- Round .5 itself to the even value (e.g., round both 5.5 and 6.5 to 6)

By these rules, you should place someone who reported 1.8 glasses of water in the 2-3 category of table 3.1a. Thus, the category listed as 2-3 glasses of water really covers all values greater than or equal to 1.5 and less than 3.5 glasses of water, or 1.5-3.4999…glasses. These limits are called the **true limits** of the interval. What are the true limits of the interval 15-21?

TABLE 3.1a
Average number of glasses of water consumed per week by residents of X County, 1990

Average Number Glasses of Water/Week	Number of Residents
0-1	20
2-3	51
4-7	124
8-14	119
15-21	43
22-28	36
29-35	13
36-42	4
Total	**410**